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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,943	04/11/2005	Yoshinobu Suehiro	PTGF-04078US	2058

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EXAMINER
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MAKIYA, DAVID J

ART UNIT	PAPER NUMBER
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2885

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/521,943	<b>Applicant(s)</b> SUEHIRO ET AL.	
	<b>Examiner</b> David J. Makiya	<b>Art Unit</b> 2885	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29,34 and 35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29,34 and 35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/30/08</u> .   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/5/2008 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 10-17, 19-23, 25-29 and 34-35 are rejected under 35 U.S.C. 103(a) as unpatentable over Smith et al. (US Patent 6,851,835) in view of Hecht (US Patent 6,871,993).

With respect to claims 1, 12, and 29, Smith et al. teaches a light emitting apparatus, comprising a light source section 20 comprising a solid-state light emitting element 50; a power supply member 30 that supplies power to the light source section (Column 5, Lines 24-35); a reflection section 12 that is disposed opposite to a light extraction surface of the light source section to reflect light emitted from the light source section (Column 5, Lines 24-35); and a heat radiation member 40 that is disposed with a heat radiation width in a back direction of the light source section; and an insulating layer 30 disposed between the power supply member and the heat radiation member (Figure 4), wherein the heat radiation member comprises a planar member

disposed parallel to a light extraction direction of the light emitting apparatus (Figure 4), the power supply member, which is separate from the heat radiation member, is secured to an end face of the planar member (Column 8, Lines 58-66), the light source section is mounted on the end face of the planar member (Figure 4; Column 8, Lines 58-66).

However, Smith et al. fails to teach the planar member is disposed parallel to a longitudinal direction of the power supply member or the material being aluminum.

Hecht teaches a light emitting apparatus comprising a light source section 14, a power supply section 26, a reflection section 12, a heat radiation member 28, and an insulating layer 26, wherein the heat radiation member comprises a planar member 30 disposed parallel to a light extraction direction and the planar member is disposed parallel to a longitudinal direction of the power supply member (Figure 1) and wherein the heat radiation member is made of an aluminum material (Column 2, Lines 45-51).

It would have been obvious and advantageous to one of ordinary skill in the art at the time of the invention to modify and reconstruct the light emitting apparatus of Smith et al. by rotating the planar member from the teachings of Hecht because aluminum is a “thermally conductive and rigid material...to dissipate heat” (Hecht; Column 2, Lines 45-51) and is also a light reflecting material and since it has been held that rearranging parts of a prior art structure involves only routine skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

With respect to claim 2, 3, and 11, Smith et al. teaches a light emitting apparatus, comprising a light source section 20 comprising a solid-state light emitting element 50; a power supply member 30 that supplies power to the light source section (Column 5, Lines 24-35); a

Art Unit: 2885

reflection section 12 that is disposed opposite to a light extraction surface of the light source section to reflect light emitted from the light source section (Column 5, Lines 24-35); a heat radiation member 40 that is disposed with a heat radiation width in a back direction of the light source section; an insulating layer 30 disposed between the power supply member and the heat radiation member; and a case 10 in which the reflection section and the radiation member are placed and which externally radiates heat to be transferred from the heat radiation member (Figure 7), wherein the heat radiation member comprises a planar member disposed parallel to a light extraction direction of the light emitting apparatus (Figure 4), and the power supply member, which is separate from the heat radiation member, is secured to an end face of the planar member (Column 8, Lines 58-66), the light source section is mounted on the end face of the planar member (Figure 4; Column 8, Lines 58-66).

However, Smith et al. fails to teach the planar member is disposed parallel to a longitudinal direction of the power supply member or the material being aluminum.

Hecht teaches a light emitting apparatus comprising a light source section 14, a power supply section 26, a reflection section 12, a heat radiation member 28, and an insulating layer 26, wherein the heat radiation member comprises a planar member 30 disposed parallel to a light extraction direction and the planar member is disposed parallel to a longitudinal direction of the power supply member (Figure 1) and wherein the heat radiation member is made of an aluminum material (Column 2, Lines 45-51).

It would have been obvious and advantageous to one of ordinary skill in the art at the time of the invention to modify and reconstruct the light emitting apparatus of Smith et al. by rotating the planar member from the teachings of Hecht because aluminum is a “thermally

Art Unit: 2885

conductive and rigid material...to dissipate heat” (Hecht; Column 2, Lines 45-51) and is also a light reflecting material and since it has been held that rearranging parts of a prior art structure involves only routine skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

With respect to claim 10, Smith et al. teaches the light emitting apparatus wherein the case comprises a high reflectivity surface to reflect the light (Column 5, Lines 36-46).

With respect to claim 13, Smith et al. teaches the light emitting apparatus wherein the heat radiation section comprises a heat radiation support that comprises a high thermal conductivity material and transfers to the heat radiation member heat generated from the light source section (Column 8, Lines 58-67), and a heat radiation plate that transfers the heat through the heat radiation support (Figure 7).

With respect to claim 14, Smith et al. teaches a light emitting apparatus, comprising a light source section 20 comprising a solid-state light emitting element 50; a power supply member 30 that supplies power to the light source section (Column 5, Lines 24-35); a reflection section 12 that is disposed opposite to a light extraction surface of the light source section to reflect light emitted from the light source section (Column 5, Lines 24-35); and a heat radiation member 40 that is disposed with a heat radiation width in a back direction of the light source section; and an insulating layer 30 disposed between the power supply member and the heat radiation member, wherein the power supply member is formed with a width in the back direction of the light source section (Figure 4), wherein the heat radiation member comprises a planar member disposed parallel to a light extraction direction of the light emitting apparatus (Figure 7), and the power supply member, which is separate from the heat radiation member, is

secured to an end face of the planar member (Column 8, Lines 58-66), the light source section is mounted on the end face of the planar member (Figure 4; Column 8, Lines 58-66).

However, Smith et al. fails to teach the planar member is disposed parallel to a longitudinal direction of the power supply member or the material being aluminum.

Hecht teaches a light emitting apparatus comprising a light source section 14, a power supply section 26, a reflection section 12, a heat radiation member 28, and an insulating layer 26, wherein the heat radiation member comprises a planar member 30 disposed parallel to a light extraction direction and the planar member is disposed parallel to a longitudinal direction of the power supply member (Figure 1) and wherein the heat radiation member is made of an aluminum material (Column 2, Lines 45-51).

It would have been obvious and advantageous to one of ordinary skill in the art at the time of the invention to modify and reconstruct the light emitting apparatus of Smith et al. by rotating the planar member from the teachings of Hecht because aluminum is a “thermally conductive and rigid material...to dissipate heat” (Hecht; Column 2, Lines 45-51) and is also a light reflecting material and since it has been held that rearranging parts of a prior art structure involves only routine skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

With respect to claim 15, Smith et al. teaches the light emitting apparatus wherein the power supply member comprises a metallic thin film and is disposed with a width in the back direction of the light source section and is integrated with the heat radiation member while being insulated from the heat radiation member (Figure 4).

With respect to claim 16, Smith et al. teaches the light emitting apparatus wherein the power supply member comprises a metallic thin film and is sandwiched through an insulator between a plurality of heat radiation plates to compose the heat radiation member (Figure 4).

With respect to claim 17, Smith et al. teaches the light emitting apparatus wherein a spectrum light with a plurality of region wavelengths is radiated from the solid-state light emitting element or from the periphery of the solid-state light emitting element (Column 10, Lines 2-10).

With respect to claims 19, 20, and 23, Smith et al. teaches the light emitting apparatus, but fails to teach the heat radiation section has the heat radiation width that is three times or more its thickness, the solid-state light emitting element has a width that is within five times that of the solid-state light emitting element, or the light source with a turn-on power of 1W or more.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the width of the heat radiation section, the width of the light emitting element, or the power level, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only ordinary skill in the art.

*In re Aller*, 105 USPQ 233.

With respect to claim 21, Smith et al. teaches the light emitting apparatus wherein the heat radiation section comprises a shape that protrudes toward a bottom of the reflection surface (Figure 4).



With respect to claim 22, Smith et al. teaches the light emitting apparatus wherein the reflection surface opposite to the light source section comprises a solid angle of  $2\pi$  to  $3.4\pi$  strad (Figure 4).

With respect to claim 25, Smith et al. teaches the light emitting apparatus wherein the light source section comprises a plurality of solid-state light emitting elements (Figure 1A).

With respect to claim 26, Smith et al. teaches the light emitting apparatus wherein the light emitting apparatus comprises a plurality of light source sections (Figure 1), and a plurality of reflection sections and the heat radiation members corresponding to the plurality of the light source sections (Figure 7).

With respect to claim 27, Smith et al. teaches the light emitting apparatus wherein the plurality of the light source sections generate a plurality of emission colors (Column 10, Lines 2-10).

With respect to claim 28, Smith et al. teaches the light emitting apparatus wherein the plurality of the light source sections generate emission colors of R, G, and B (Column 10, Lines 2-10 and Column 1, Lines 54-61).

With respect to claim 34, Smith et al. teaches the light emitting apparatus wherein the power supply member is insulated from the heat radiation member by the insulation layer (Figure 4).

With respect to claim 35, Smith et al. teaches the light emitting apparatus wherein the heat radiation member comprises a second planar member disposed parallel to the planar member (Figure 7).

Claims 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. in view of Hecht as applied to claims 1 and 2, respectively, and further in view of Young (US Patent 6,672,741).

With respect to claims 4-9, Smith et al. in view of Hecht teaches the light emitting apparatus as described above with an inorganic material board 13 on which a conductive pattern is formed to supply power to the solid state light emitting element, but fails to teach the light source section is packaged such that the solid-state light emitting element is sealed with a light transmitting material.

Young teaches a light emitting apparatus comprising a light source section 12, a power supply section 14, and a reflection section 11, wherein the light source section is packaged such that the solid-state light emitting element is sealed with a light transmitting, inorganic seal material 13 comprising glass (Column 3, Lines 1-2) and a refractive index of 1.55 or more (Column 2, Line 49-Column 3, Line 2).

It would have been obvious and advantageous to one of ordinary skill in the art at the time of the invention to reconstruct the light emitting apparatus of Smith et al. in view of Hecht by adding the seal material from the teaching of Young because the “light emitting diode 12 is fixed securely to the front cover” (Young; Column 2, Lines 49-59) to protect the light source (Young; Figure 2), but without limiting the light because the “cover is made up of a transparent material” (Young; Column 1, Lines 63-65).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. in view of Hecht as applied to claim 17, and further in view of Lowery (US Patent 5,959,316).

With respect to claim 18, Smith et al. in view of Hecht teaches the light emitting apparatus as described above, but fails to teach a phosphor disposed on the periphery of the solid-state light emitting element.

Lowery teaches a light emitting apparatus comprising a light emitting diode 18 and a phosphor 52 disposed on the periphery of the solid-state light emitting element.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the light emitting apparatus of Smith et al. in view of Hecht by adding a phosphor from the teachings of Lowery because a phosphor “provides a final combination of light which appears as white to the human eye” (Lowery; Column 1, Lines 21-27). Furthermore, it would be advantageous to reconstruct the device with the phosphor because it would “provide a constant, uniform white light LED” (Lowery; Column 1, Lines 46-52).

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. in view of Hecht as applied to claim 1, and further in view of McCullough et al. (US 2004/0252502).

With respect to claim 24, Smith et al. in view of Hecht teaches the light emitting apparatus as described above, but fails to teach the material of the reflection section.

McCullough et al. teaches a light emitting apparatus comprising a light source section 46, a power supply section 45, a reflection section 12, and a heat radiation member 40, wherein the reflection section is made of a resin material (Paragraph 25).

It would have been obvious and advantageous to one of ordinary skill in the art at the time of the invention to reconstruct the reflection section of Smith et al. in view of Hecht with

the resin material from the teachings of McCullough et al. because resin is a “thermally conductive” (McCullough et al.; Paragraph 26) and is also a “dimensionally stable and have high impact strength” (McCullough et al.; Paragraph 25).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-29, 34, and 35 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's arguments regarding the “light source section is mounted on the end face of the planar member,” Figure 1A of Smith et al. teaches the light source section including board 30 and it is mounted on an end face of the planar member 40 as shown in Figure 4 of Smith et al. Therefore, the reference meets the limitations as claimed.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jacobson et al. (US Patent 7,246,921), Lin (US 2007/0279910), and Wada et al. (US 2006/0245201) teach light emitting apparatuses with heat radiation and insulating members.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Makiya whose telephone number is (571) 272-2273. The examiner can normally be reached on Monday-Friday 7:30am - 4:00pm (ET).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jong-Suk (James) Lee can be reached on (571) 272-7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DJM/ 06/19/2008

/Jong-Suk (James) Lee/  
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